Installation and Operation Manual

DVD-9101-201-x

Serial Digital Video Disc Player

Document # 540339

DECRANE AEROSPACE
Audio International

7300 Industry Drive, North Little Rock, AR 72117
Phone: 501-955-2929 Fax: 501-955-2988
www.decraneaerospace.com

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IR	11/2006	Initial Release
A	02/2008	Updated Outline Drawings corrected -2 connector mating part # Updated logo, website, & company name change Corrected Table of Illustrations & Table of Contents Added cover bezel information Replaced 2.4.1 & 2.4.2 Block Diagram images with correct ones Added Fahrenheit to 3.3.11 and to 3.7.1 Electrical Table Corrected 3.7.1 Electrical Power Requirements Corrected Outline Numbers for 3.4.5, 3.4.5, 3.7.4, 4.3, 7.1 Added missing 7.0 Reference Drawing Corrected dimensions for 6.0 Specifications Table Changed Pinout # 3 Description from “No Connect” to “Reserved” Corrected grammatical errors
B	06/2009	Added recommendation to terminate unused outputs with a 75-ohm load, Section 3.4.4 Added recommendation to use EMI hood, Sections 3.4.4 & 3.8 Updated bonding strap requirement, Section 3.4.4 Updated wiring specification for digital audio to show recommended cable impedance, Section 3.4.5 Separated Instructions for *Continued Airworthiness* & *Troubleshooting*, Sections 5.0 & 6.0 Included *Environmental Qualification Data*, Section 9.0

Reference Documents
(or latest revision)

Document #	Description
525859 Rev IR1	DVD-9101-201-x Outline Drawing

Service Bulletin List

Service Bulletin #	Subject	Manual Revision	Revision Date

Table of Illustrations

Section #	Description	Page #
2.4	Typical System Block Diagram	5
4.1	Front Panel Controls	13
7.0	Reference Drawings	23-24

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Table of Contents

Section		Description	Page
1.0		**General Information**	**3**
	1.1	Introduction	3
	1.2	Purpose of the Equipment	3
	1.3	Operational Features	3
	1.4	Optional Equipment	4
2.0		**Application**	**4**
	2.1	Typical Application	4
	2.2	Display	5
	2.3	Media and Format Capabilities	5
	2.4	Typical System Block Diagram	5
3.0		**Installation**	**6**
	3.1	Preparation	6
	3.2	Unpacking and Inspection	7
	3.3	*Cautions & Warnings*	7
	3.4	Wiring Requirements	8
	3.5	Physical Characteristics	9
	3.6	Clearance and Separation Requirements	10
	3.7	Electrical Characteristics	10
	3.8	Mating Connector Information	11
	3.9	Pinout Assignments and Descriptions	11
	3.10	Post Installation Test	12
4.0		**Operation**	**13**
	4.1	Front Panel Controls	13
	4.2	Control Functions	14
	4.3	Supported RS-485 and IR Commands	17
5.0		**Instructions for Continued Airworthiness**	**20**
6.0		**Troubleshooting**	**20**
	6.1	General Troubleshooting Procedures	20
	6.2	Troubleshooting Chart	22
7.0		**Specifications**	**22**
8.0		**Reference Drawings**	**23**
9.0		**Environmental Qualification Data**	**25**

DVD-9101-201-x

Serial Digital Video Disc Player

1.0 General Information

1.1 Introduction

This manual contains information for the proper installation and operation of DeCrane Aerospace Audio International's (DAAI) Digital Video Disc Player, Model # DVD-9101-201-x. The "-x" suffix in the model number designates the type of connector utilized; "-1" = Positronic and "-2" = D-Subminiature. Also included are mechanical and electrical characteristics of the unit.

1.2 Purpose of the Equipment

DeCrane Aerospace Audio International's DVD-9101-201-x is a small form-factor DVD Player compatible in size to current DeCrane Aerospace Audio International Single-Disc Players.

The DVD-9101-201-x contains three (3) SDI video outputs and three (3) AES-3 audio output channels. Audio, video, and control commands are handled via DAAI's RS-485 data bus. This device is designed to interface with equipment containing DAAI Serial Digital video and AES-3 audio equipment and is provided with power and ID strapping connections.

This unit incorporates four (4) ID strapping connections to allow up to 16 like units to operate concurrently on the same RS-485 serial data bus segment independently of each other.

1.3 Operational Features

- Supports standard commercial CD, DVD, and MP3 audio
- Optional IR control
- Three (3) SDI video outputs and three (3) AES-3 audio 2-channel outputs or AES-3 audio 5.1 channel output
- Supports all DVD region codes for international operation
- Easy-to-use front panel controls
- Up to 45 advanced functions available
- Hand held remote or any DAAI data bus device for complete system customization
- Full range frequency response

- Nine (9) language and subtitle options (dependent upon user-supplied disc capabilities)
- Easy to mount and connect
- Compact, lightweight package
- Four (4) Forward and Reverse accelerated scanning speeds with DVD video
- Three (3) Slow, Forward, and Reverse speeds with DVD video
- Internal test signal generation for convenient device validation, system set-up, and system troubleshooting

1.4 Optional Equipment

The DVD-9101-201-x is optionally controlled by DAAI infrared remote or touch screen panels, and it is important to remember that some remote controls possess functions not duplicated by the unit's front panel buttons, such as Menu and Set-Up. While the DVD-9101-201-x is a complete and fully functional standalone DVD Player, it is strongly recommended that a remote control device also be employed for thorough enjoyment of the unit.

DeCrane Aerospace Audio International also offers a wide variety of equipment that will perfectly complement the DVD-9101-201-x and will also be valuable and attractive additions to any cabin interior.

An optional cover bezel DVDKIT-9101-101-1 may be ordered to match the interior style of any aircraft. The cover bezel is not an integral part of the player and must be ordered as a separate item. Contact your DeCrane Aerospace Audio International representative for details.

2.0 Application

2.1 Typical Application

Typical Audio Output (AES-3 digital audio) interfaces include various AES-3 distribution and/or signal manipulation devices. This unit is capable of interfacing and providing output to compatible DeCrane Aerospace Audio International devices capable of distributing and/or processing the source output digital audio including, but not limited to: Audio routers, stand-alone AES-3 decoders, and audio power amplifiers with built-in AES-3 decoding capability.

Typical Video Output (SMPTE-259M Standard Definition-Serial Digital Interface) interfaces include various SD-SDI distribution and/or signal manipulation devices. This unit is capable of interfacing and providing output to compatible DeCrane Aerospace Audio International SD-SDI devices capable of distributing and/or deserializing the source output

digital video including, but not limited to: SDI routers, Stand-alone SDI deserializers, and LCD displays with built-in SDI deserialize capability.

2.2 Display

An eight-character display is provided on the front of the unit to display Title, Chapter, and Track during playback. The display is also used to provide user feedback during other operations including disc loading.

2.3 Media and Format Compatibilities

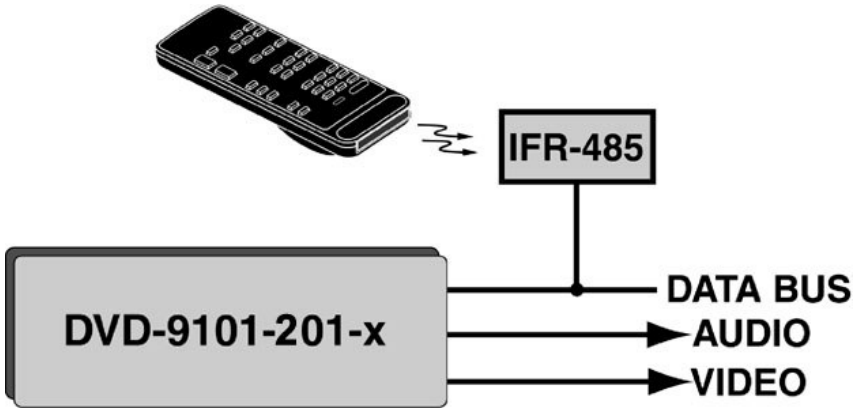
DVD-9101-201-x is compatible with standard commercial audio CD and video DVD. Note that since DVD disc format standards are constantly evolving, some DVD discs may not play properly or may cause the unit to malfunction. DAAI does not guarantee the DVD-9101-201-x is compatible with all media or formats.

Compatible Formats	
Standard DVD-Video	Standard CD-Recordable
DVD-R/-RW, DVD+R/+RW	Standard CD-ReWriteable
Video CD, SVCD	DVD-Audio
Standard CD-Digital Audio	SACD, CD layer only
DVD[Plus]	Dual disc
MP3, WMA9	JPEG

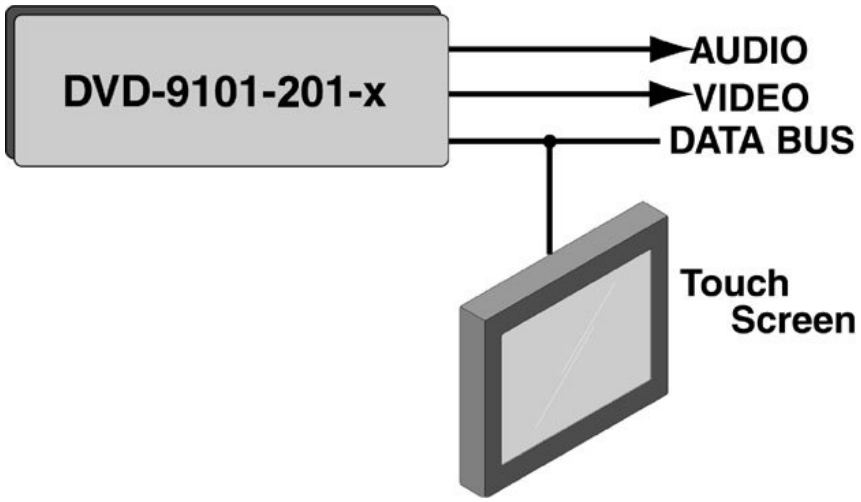
Typical DVD authoring programs are compatible and produce playable movies. However some programs may create menu structures or controls that are not compatible, or do not display or function as intended.

2.4 Typical System Block Diagram

2.4.1 This system is fully compatible with DeCrane Aerospace Audio International's RS-485 digital data bus system. It can be configured for IR remote control utilizing DAAI's hand held remote control unit and IFR-485.



2.4.2 The unit can also be configured for Touch Screen or remote panel control (i.e. entertainment control panels). The panels are on DAAI's RS-485 digital data bus system and configured to control the operational features of the DVD-9101-201-x.



3.0 Installation

3.1 Preparation

3.1.1 Careful consideration of the location of this and all other audio/visual modules is necessary. Some of the items to be considered in the design and layout of the aircraft cabin include:

- Space
- Available power supply
- Environmental conditions (temperature, humidity, etc.)
- Length of cable runs
- Location of other aircraft systems (oxygen delivery)

3.1.2 The DVD-9101-201-x shall be installed to conform to the standards designated by the customer, installing agency, and existing conditions as to the unit location and type of installation.

3.1.3 Mounting screws are required to secure the unit. Mounting provisions are provided via four (4) 10-32 UNF-2B threaded mounting holes – two (2) on the left and right sides of unit. Refer to Section 7.0, Reference Drawings, for illustrations.

3.1.4 The installing agency shall supply and fabricate all external cables to the DVD-9101-201-x. The length and routing of external cables shall be carefully studied and planned before attempting installation of the unit. Allow adequate space for installation of cable and connectors. Mating connectors are the responsibility of the

installing agency. Correct pin assignments as outlined in Section 3.8 are the responsibility of the installing agency.

3.2 Unpacking and Inspection

3.2.1 Carefully open the packaging and remove the DVD-9101-201-x. Verify that all components have been included in the package per the packing list. Inspect the unit for shipping damage.

3.2.2 If damage has occurred during shipping, a claim should be filed with DeCrane Aerospace Audio International WITHIN 24 hours and a **Return Request Authorization Number** shall be obtained from DAAI by contacting the Repair Department at 501.801.8101. Repackage the unit in its original packaging materials and return it to DAAI following instructions given by the DAAI representative. Refer to the front cover of this manual for address. If no return is necessary, retain the packing list and the packing materials for storage.

3.3 *Cautions & Warnings*

3.3.1 It is important to do a pin-to-pin power and ground check on all connectors. Ensure that power and ground are applied only where specified. Damage to the unit may result if power or ground is applied to the wrong points.

3.3.2 **DO NOT** connect or disconnect the unit while power is applied.

3.3.3 **DO NOT** remove any factory-installed screws. Damage to the unit may result and void any warranties.

3.3.4 **DO NOT** drop the unit or subject it to strong shock. The unit contains glass parts that may break or crack.

3.3.5 **DO NOT** place foreign objects into openings. Contact with foreign objects may result in dangerous voltage or electric shock.

3.3.6 **DO NOT** place near strong magnetic fields, radiators or other heat sources.

3.3.7 **DO NOT** use this unit other than for its intended purpose. Doing so might lead to electric shock or injury.

3.3.8 **DO NOT** use near water, moisture, or volatile sprays. Do not use any type of solvent when cleaning (surface damage may occur).

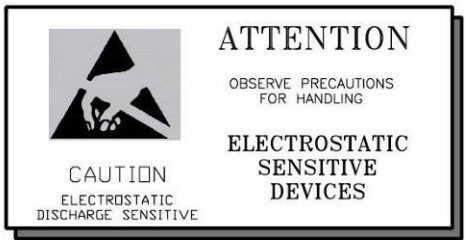
3.3.9 **DO NOT** expose unit to sun or bright light.

3.3.10 The chassis material and structural design of this unit is such that the unit is not capable of containing fire within the unit. This unit does not provide for waterproof operation.

3.3.11 Operating temperature should not exceed:

+5° to +131° F
–15° to +55° C

3.3.12 **ESD** (Electro Static Discharge) guidelines shall be followed.



3.4 Wiring Requirements

3.4.1 Introduction

The installing agency shall supply and fabricate all external cables. The length and routing of external cables shall be carefully studied and planned before attempting installation of the equipment. Allow adequate space for installation of cable and connectors.

3.4.2 Power Wires

Power and Ground wires shall be in accordance with **M22759** or equivalent.

3.4.3 Bonding

The grounding lug shall be electrically bonded to the aircraft structure using a braided copper bonding strap with <0.01 Ω resistance from the DVD to the aircraft frame.

3.4.4 Video Lines

All serial digital video wiring connections are recommended to use **PIC V76261** shielded coax. Serial digital video provided in SMPTE 259M format. All connector types shall be compatible with above-listed wiring requirements.

It is recommended to terminate any unused video outputs with a 75-ohm load inside the aircraft side mating connector.

It is recommended to use a metal EMI hood, i.e. part number D37000ANVL0 or D37000ANE0 from Positronic Industries or equivalent, for the connector backshell. The shield of the coaxial cable should be connected to the bonding point inside the EMI hood by soldering a ¼" braided bonding strap to the shield side of the size-8 contact where the contact meets the cable and electrically connecting to the bonding point inside the hood.

3.4.5 Serial Digital Audio Wiring

All AES3 digital audio connections are recommended to use twisted shielded cable with a cable impedance of 110 Ω +/- 10% and the shield properly grounded at the source end. Twisted shielded cable shall be 22 AWG (minimum) and shall be in accordance with **NEMA WC 27500**.

3.4.6 RS-485 Data Bus Wiring

The DVD-9101-201-x is designed to interface with other DeCrane Aerospace Audio International equipment via DAAI's proprietary RS-485 serial data bus. The data bus shall be implemented using a twisted shielded pair cable in accordance with **NEMA WC 27500**. The wire size for the conductors in this cable shall be 22 AWG, MINIMUM. Shield pins are available for connecting data bus shields when required. Refer to DAAI document 650007 for RS-485 serial data bus design architecture.

3.5 Physical Characteristics

3.5.1 Refer to Section 8.0 for unit dimensions and attachment points.

3.5.2 When mounting the unit, allow sufficient space for mating connectors.

3.5.3 Chassis material is 6061-T6 aluminum, clear of anodization while maintaining electrical conductivity to ground from any point on the chassis via gold irridite treatment, per **MIL-C-5541**.

3.5.4 This unit has an internal fan and ventilation holes in the chassis for cooling. Installation recommendation requires 1-inch spacing from other components and structures except the mounting surface for which the unit should be in direct contact.

3.5.5 Bonding between chassis mounting point and airframe installation to be <0.01 Ω resistance using a braided copper bonding strap. No

surface prep is required due to conductive chassis finish (except front bezel).

3.6 Clearance and Separation Requirements

When running cables, avoid sharp bends and placing cables near aircraft control cables. Maintain a MINIMUM clearance of three (3) inches from any control cable. If wiring is run parallel to combustible fluid or oxygen lines, maintain a separation of six (6) inches between the lines.

3.7 Electrical Characteristics

3.7.1 Electrical Specifications:

Electrical	Nominal Power	600mA @ +28 VDC
	Maximum Power	900mA @ +28 VDC
	Operating Voltage Range	+18 to +32 VDC
	Data Bus Type	AI RS-485
	Serial Digital Interface	270 Mb/s per SMPTE-259M three outputs
	Audio Interfaces	AES-3 digital audio outputs three outputs
	IR Signal	5V active low
	Operating Temperature	+5° to +131° F -15° to +55° C
	Storage Temperature	-4° to +176° F -20° to +80° C

3.7.2 The DVD-9101-201-x utilizes one (1) 25-pin connector for electrical connections, which provides power, data bus control, infrared input, and four (4) address strapping pins and a strapping common for unit identification on the RS-485 data bus and for IR control.

3.7.3 Infrared input provides a ground reference connection (-). For optimum infrared signal transmission, this ground reference should connect to the IFR-485 module being utilized.

3.7.4 The four (4) address strap pins are able to be connected to the strap common. This provides 16 strapping configurations, allowing up to 16 identical units to be individually controlled on a system.

3.8 Mating Connector Information

Model #	Mating Connector
DVD-9101-201-1	CBC25W3F140000 or equivalent (Positronic Industries) Size 8 Contacts: 110236 (x3) (PIC Wire & Cable)
DVD-9101-201-2	3025W3SXK99A1OX Female Plug w/ male jackscrews or equivalent (American Conec Corporation) Size 8 Contacts: 110236 (x3) (PIC Wire & Cable)

Note: It is recommended to use a metal EMI hood, i.e. part number D37000ANVL0 for slidelock or D37000ANE0 for jackscrew from Positronic Industries or equivalent, for the connector backshell.

3.9 Pinout Assignment and Descriptions

DVD-9101-201-x	
Pin #	**Description**
1	+28 VDC Power Input
2	Circuit Ground
3	Reserved
4	RS-485 Serial Data Bus A (HI)
5	RS-485 Serial Data Bus B (LO)
6	RS-485 Serial Data Bus SHIELD
7	ID Common
8	ID 0
9	ID 1
10	ID 2
11	ID 3
12	Pause Input
13	Infrared Digital Input
14	AES3 Audio Output #1 +
15	AES3 Audio Output #1 –
16	AES3 Audio Output #1 SHIELD
17	AES3 Audio Output #2 +
18	AES3 Audio Output #2 -
19	AES3 Audio Output #2 SHIELD
20	AES3 Audio Output #3 +
21	AES3 Audio Output #3 -
22	AES3 Audio Output #3 SHIELD
A1	SD-SDI Video Output # 1
A2	SD-SDI Video Output # 2
A3	SD-SDI Video Output # 3

3.10 Post Installation Test

This section is designed to assist the user in determining whether the DVD Player has been properly installed. First, before applying power, ensure the unit is connected correctly, especially concerning Power and Ground wiring. The audio signal output of the unit is generally connected to cabin speaker systems in addition to headphone locations. Verify all connections before supplying power to the unit.

There are no ON/OFF controls on the unit so ensure that +28 VDC power has been connected. Normally if power is not properly connected, the front panel controls' backlighting will not be illuminated and the player will not respond to any commands. If power is properly connected, the AI logo will appear on the monitor screen.

Activate monitors and speakers from the appropriate control panels. Audio will be supplied through headphones and/or speakers per system design. Make certain that the monitor(s) connected to the DVD Player are on and functional.

Be certain to load the disc correctly—if the DVD has a sticker, it should be loaded with the sticker facing up! Gently push the into the DVD slot. The DVD unit will accept the DVD and pull it inside.

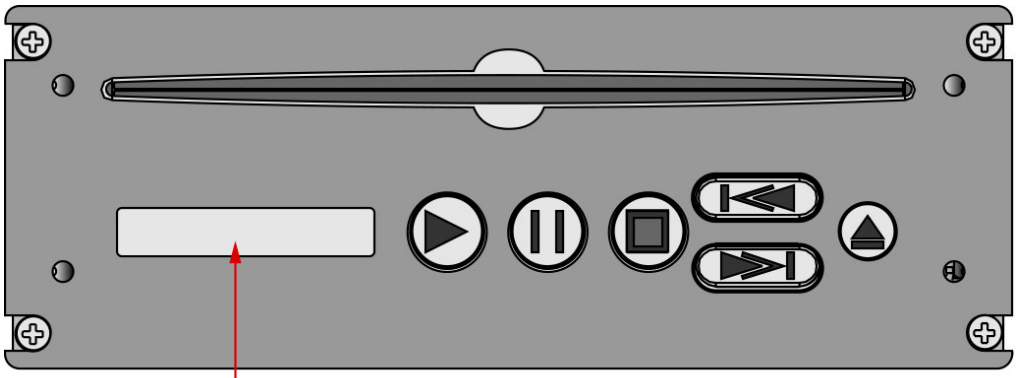
The disc should begin loading, which will be indicated on the monitor screen. If the disc does not start playing automatically after it has loaded, then use the DVD Player's front panel buttons or the handheld remote control unit to select PLAY. DVD material should appear on the appropriate monitor. This material is usually a menu, but this may vary, depending on individual DVD configuration. For CDs, the tracks should be listed on the side of the screen. Audio should channel through the speaker/headphone system.

If sound cannot be immediately heard through speakers or headphones, it may be that the volume is too low and should be increased appropriately. Note that there are no audio controls on the DVD-9101-201-x. Any desired adjustments must be performed through other audio distribution devices.

If power is interrupted (>200 msec) or power drops below +18 VDC while a disc is playing, the player may shut down. If a DVD disc is in the player, the unit will begin playback from the beginning of the disc automatically.

4.0 Operation

4.1 Front Panel Controls



8-digit Alpha-Numeric Display w/Green Backlighting

From left to right, the buttons are:

PLAY **PAUSE** **STOP**

REVERSE SKIP (top) **FORWARD SKIP** (bottom)

EJECT

4.2 Control Functions:

EJECT BUTTON

The EJECT Button allows the user to eject the DVD. Pressing the EJECT Button will allow the user to gently pull the DVD out of the mechanism.

PLAY BUTTON

The PLAY Button allows the user to begin or resume normal playback when the DVD Player is in the following modes: Stop, Pause, Fast Forward, Fast Reverse, Slow Forward, and Slow Reverse. See the following pages for details on these modes.

In lieu of remote or RS-485 commands, the user can press and hold the PLAY Button for approximately five (5) seconds to access the DVD's Media Menu. The PLAY Button acts also as an "ENTER" Button when selecting menu options.

REVERSE SKIP BUTTON

During movie or audio play, press to skip to the beginning of the Previous Chapter or Track. Press and hold for approximately one (1) second to enter FAST REVERSE (x8) Mode. Also used to navigate (as Left curser) in DVD's Media Menu. Press and hold for approximately five (5) seconds to navigate as Up curser in DVD's Media Menu.

REVERSE BUTTON (Not a front panel button. This feature is found on remotes and data bus connected devices only)

The FAST/SLOW REVERSE Button is functionally dependent on the current mode of the DVD Player, and the media type being played.

DVD VIDEO – FAST REVERSE: This button is used during normal playback mode.

- Pressing the REVERSE Button once will place the DVD Player in FAST REVERSE x2 Mode with no audio output.
- Pressing the REVERSE Button a second time will place the DVD Player in FAST REVERSE x4 Mode with no audio output.

- Pressing the REVERSE Button a third time will place the DVD Player in FAST REVERSE x8 Mode with no audio output.
- Pressing the REVERSE Button a fourth time will place the DVD Player in FAST REVERSE x32 Mode with no audio output.
- Pressing the REVERSE Button a fifth time will cycle the FAST REVERSE Mode back to PLAY.
- Pressing the PLAY Button will exit the current FAST REVERSE Mode and return the DVD Player to normal playback.

FORWARD SKIP BUTTON

DVD VIDEO – FORWARD: During movie or audio play, press to skip to the beginning of the Next Chapter or Track. Press and hold for approximately one (1) second to enter Fast Forward (x8) Mode. Also used to navigate (as Right curser) in DVD's Media Menu. Press and hold for approximately five (5) seconds to navigate as a Down curser in DVD's Media Menu.

FORWARD BUTTON (Not a front panel button. This feature is found on remotes and data bus connected devices only)

The FORWARD Button is functionally dependent on the current mode of the DVD Player, and the media type played.

- Pressing the FORWARD Button once will place the DVD Player in FAST FORWARD x2 Mode.
- Pressing the FORWARD Button a second time will place the DVD Player in FAST FORWARD x4 Mode.
- Pressing the FORWARD Button a third time will place the DVD Player in FAST FORWARD x8 Mode.
- Pressing the FORWARD Button a fourth time will place the DVD Player in FAST FORWARD x32 Mode.
- Pressing the FORWARD Button a fifth time will cycle the FAST FORWARD Mode back to FAST FORWARD x2 Mode.
- Pressing the PLAY Button will exit the current FAST FORWARD Mode and return the DVD Player to normal playback.

PAUSE BUTTON

DVD VIDEO – PAUSE: Press the PAUSE Button once to place the DVD Player in PAUSE Mode. Several functions become available when the DVD Player is in PAUSE Mode:

- The user can enter SLOW REVERSE Mode by pressing the REVERSE Button. (Not a front panel option. This function is accessible by remotes and data bus connected devices only)
- The user can enter SLOW FORWARD Mode by pressing the FORWARD Button. (Not a front panel option. This function is accessible by remotes and data bus connected devices only)
- The user can Step through the video by repeatedly pressing the PAUSE Button.
- Normal playback can be resumed by pressing the PLAY Button.

DVD Audio/Audio CD/MP3 CD:

Press the PAUSE Button once to place the DVD Player in PAUSE Mode.

Normal playback can be resumed by pressing either the PAUSE Button or the PLAY Button.

STOP BUTTON

Press the STOP Button during playback to place the DVD Player in HOLD Mode. Pressing the PLAY Button at this point will resume playback from the held point.

In lieu of remote or RS-485 commands, the user can press and hold the STOP Button for approximately five (5) seconds to access the DVD Player's Setup Menu.

4.3 Supported RS-485 and IR Commands

EJECT
This button functions exactly as the front panel EJECT Button: The EJECT Button allows the user to eject the DVD. Pressing the EJECT Button will allow the user to gently pull the DVD out of the mechanism.

SETUP
The SETUP Button toggles display of the Setup Menu, which allows the user to access or modify various settings. Use the navigation buttons to advance through the available settings:

GENERAL SETUP
- **ANGLE MARK:** Can be turned on or off. When this feature is turned on, an ANGLE MARK display appears on the screen for scenes that were shot at different angles.
- **OSD LANGUAGE:** Select the language that the OSD setup screens are displayed in.

SPEAKER SETUP
- **DOWNMIX:** Selects the DOWNMIX of the audio outputs. The following settings are available:
  - ***Lt / Rt* –** Switch downmix to 4 channel output.
  - ***Stereo* –** Switch downmix to 2 channel output.
  - ***Off* –** Disable downmix.
- **CENTER:** Turn CENTER SPEAKER on/off
- **REAR:** Turn REAR SPEAKERS on/off
- **SUBWOOFER:** Turn SUBWOOFER on/off
- **CENTER DELAY:** Adjust the speaker's CENTER DELAY.
- **REAR DELAY:** Adjust the speaker's REAR DELAY.
- **BASS:** Turn BASS BOAST on/off.

AUDIO SETUP
- **OP MODE:** Sets audio compression level.
  - ***LINE OUT* –** Normal audio compression. Allows scaling of compression.
  - ***RF REMOD* –** Heavy COMPRESSION Setting. No scaling allowed.
- **COMPRESSION:** Sets the COMPRESSION Level when in LINE OUT OP Mode.
- **PRO LOGIC:** Enables / disables PRO LOGIC Mode.

PLAY MODE SELECTION
- **SHUFFLE:** Turns SHUFFLE Mode on/off.
- **REPEAT:** Turns REPEAT Mode on/off.
- **SCAN:** Turns SCAN Mode on/off.

PREFERENCES

- **TV DISPLAY:** The user can choose to display the video they are watching in one of the following aspect ratios:
  WIDE (16:9) – Displays video using a 16:9 aspect ratio recommended for widescreen TVs.
  NORMAL / LB (4:3) – Displays video using a 4:3 aspect ratio in the letterbox format.
  NORMAL / PS (4:3) – Displays video using 4:3 aspect ratio in the pan & scan format.
- ***AUDIO:*** This option allows the user to change the preferred audio language if available on the DVD.
- ***SUBTITLE:*** This option allows the user to change the preferred displayed subtitle if available on the DVD.
- ***DISC MENU:*** This option allows the user to change the preferred DVD MENU LANGUAGE if available on the DVD.
- ***LOCALE:*** The parental definition Mode is dependent on the country setting. Therefore "LOCALE" specifies the end user market.
- **PARENTAL:** Set movie rating lock-out level. Default password is "3308".
- **PASSWORD:** Allows the parental password to be changed.
- **DEFAULTS:** Reset to system default settings.
- **SYSTEM INFO:** Provides system information.

SUBTITLE ON/OFF

Press to access the SUBTITLE Menu. Cycle through available subtitles with the NAVIGATION Buttons. Press SUBTITLE ON/OFF to exit. Note: Subtitles are available only on certain DVD Videos.

DISPLAY

Press to display the elapsed / remaining track time and / or the elapsed / remaining disc time, depending on the media.

MENU

Press to display the menu of the current DVD Video or Audio Disc. On some DVDs, pressing MENU a second time will return to normal playback.

NAVIGATION ARROWS

Use the four directional buttons (Up Arrow, Down Arrow, Left Arrow, and Right Arrow) to guide through menu options.

RETURN

Move up a level in the Disc Menu. The availability of this function is DVD dependent.

ENTER

The ENTER Button allows the user to apply changes to the current playback and overall functionality when choosing Disc Menu and/or player's setup selections.

AUDIO LANGUAGE SELECT
This option allows the user to change the preferred AUDIO LANGUAGE if available on the DVD.

SEARCH PREV (REW)
During movie or audio play, press to “scan” backward through media. Material will scan while the button is held, and, depending on media, video input will be available.

SKIP PREVIOUS (PREV)
During movie or audio play, press to skip to the beginning of the Previous Chapter or Track. The SKIP PREVIOUS Button is functionally dependent on the current mode of the DVD Player, and the media type being played.

SEARCH FORWARD (FFWD)
During movie or audio play, press to “scan” forward through video and/or audio material. Material will scan while the button is held, and, depending on media, video input may be available.

SKIP FORWARD (NEXT)
During movie or audio play, press to skip to the beginning of the Next Chapter or Track. The SKIP FORWARD Button is functionally dependent on the current mode of the DVD Player, and the media type played.

PAUSE/STEP
Press the PAUSE Button once to place the DVD Player in PAUSE Mode. Repeated presses cause the DVD to enter STEP mode.

PLAY
The PLAY Button allows the user to begin or resume normal playback when the DVD Player is in the following modes: STOP, PAUSE, FAST FORWARD, FAST REVERSE, SLOW FORWARD, AND SLOW REVERSE.

STOP
Press the STOP Button once during playback to place the DVD Player in HOLD Mode. Pressing PLAY at this point will resume playback from the held point.

RANDOM
Press to play Chapters or Tracks in random order. Press again to exit RANDOM Mode.

SLOW
Pressing this button plays material at ½, ¼, or ⅛ normal speed.

REPEAT
REPEAT Mode allows the user to repeat designated segments of media. Use the NAVIGATION Buttons to cycle through the available REPEAT Modes. Select "Off" to exit the current REPEAT Mode.

- **REPEAT CHAPTER:** The DVD-9101-201-x will repeat the current chapter until the user exits REPEAT CHAPTER Mode.
- **REPEAT TITLE**: The DVD-9101-201-x will repeat the current title until the user exits REPEAT TITLE Mode.
- **REPEAT DISC**: The DVD-9101-201-x will repeat the disc until the user exits REPEAT DISC Mode.

A-B REPEAT
Use to continuously repeat all material between two points in time (designated A and B).

NUMBER KEYS 0-9, 10
The NUMBER Buttons allow the user to enter Title/Track/Chapter numbers in the respective Search Box. The NUMBER Buttons also allow the user to enter a PARENTAL LOCKOUT PASSWORD. Typically, to enter numbers of 2-digit length or longer, the user needs only to type the number as it appears (e.g. for 43, the user would type the "4" button followed by the "3" button). Some older remotes allow only one number entry and come equipped with a "10" button, which, when pressed, adds 10 to the number key pressed. For example, entering 21 would require the user to press the "10" key twice and then the "1" button.

ANGLE
Allows user to cycle through different angle scenes if available on DVD.

5.0 Instructions for Continued Airworthiness

No periodic scheduled maintenance or calibration is required for continued airworthiness of the SER-1001-10x-x. If the unit fails to perform to specifications, it must be removed and serviced by a qualified service facility.

6.0 Troubleshooting

In addition to the cautions and warnings provided in Section 3.3, the following guidelines and instructions will help ensure proper functionality and performance from the DVD-9101-201-x.

6.1 General Troubleshooting Procedures

- DVD-9101-201-x should be cleaned to ensure proper functionality. Use a standard DVD cleaning disc (not included with the DVD-9101-201-x) and follow the listed directions.

- Verify +28 VDC power is applied to the proper pins on the unit. Use a voltmeter to verify correct level.
- Reset by removing power from the unit for at least one (1) minute and reapply power.
- Recheck all connections to the unit for security and all harness runs for possible pinching. Recheck all pinouts for application accuracy.
- Utilizing a voltmeter, oscilloscope, or other voltage instrument, verify proper input voltage on the data bus pins to check data bus integrity. Typical measurements are as follows:
- **A to Ground : 4.0 to 4.5 VDC**
  B to Ground : 0.1 to 0.2 VDC

  If any device is transmitting (i.e., holding bus active), then these typical measurements would be reversed for the A-to-Ground and B-to-Ground measurements. This troubleshooting tool can help indicate a data bus lockup. If this occurs, remove the data bus from all other equipment one piece at a time. As each is removed, check the bus status to see if it is now functioning properly. Once you have removed the piece or pieces of offending equipment, disconnect power and then reconnect everything but the suspect component, reapply power and test the functionality of the unit.
- The RS-485 data bus is a bi-directional bus that does not have a 'bus controller'. The bus uses a differential digital signal that will transmit only when commands are entered via switch selection or other system synchronizing commands. The "A" leg of the bus is HI and the "B" leg LO.

6.2 Troubleshooting Chart

Problem	Possible Cause	Solution
No picture	➢ Unit is improperly installed ➢ No disc in source unit ➢ No power to monitor	• Verify +28 VDC power and video input is present • Insert DVD in source unit • Apply power to monitor
No sound	➢ Unit is improperly installed ➢ Audio system not powered or active ➢ Volume too low	• Verify +28 VDC power and audio input is present • Verify audio system is in active mode • Increase volume to acceptable level
Playback not functioning	➢ Disc not in the unit ➢ Disc upside down or not aligned in guide ➢ Incompatible disc in unit ➢ Dirty disc ➢ Parental lock activated ➢ Menu on the monitor	• Insert a disc • Reposition disc • Replace disc with compatible one • Clean the disc • Change or cancel parental lock feature • Exit the current menu
No power	➢ Circuit breaker has opened	• Reset circuit breaker
Poor video quality	➢ Poor DVD quality ➢ Noise being introduced into system	• Replace DVD • Move source equipment closer to monitor or distribution modules
Buttons not operating	➢ Moisture may have condensed inside unit.	• Allow unit to warm to room temperature and moisture has evaporated.
DVD disc not loading	➢ Foreign object in disc slot	• Remove foreign object

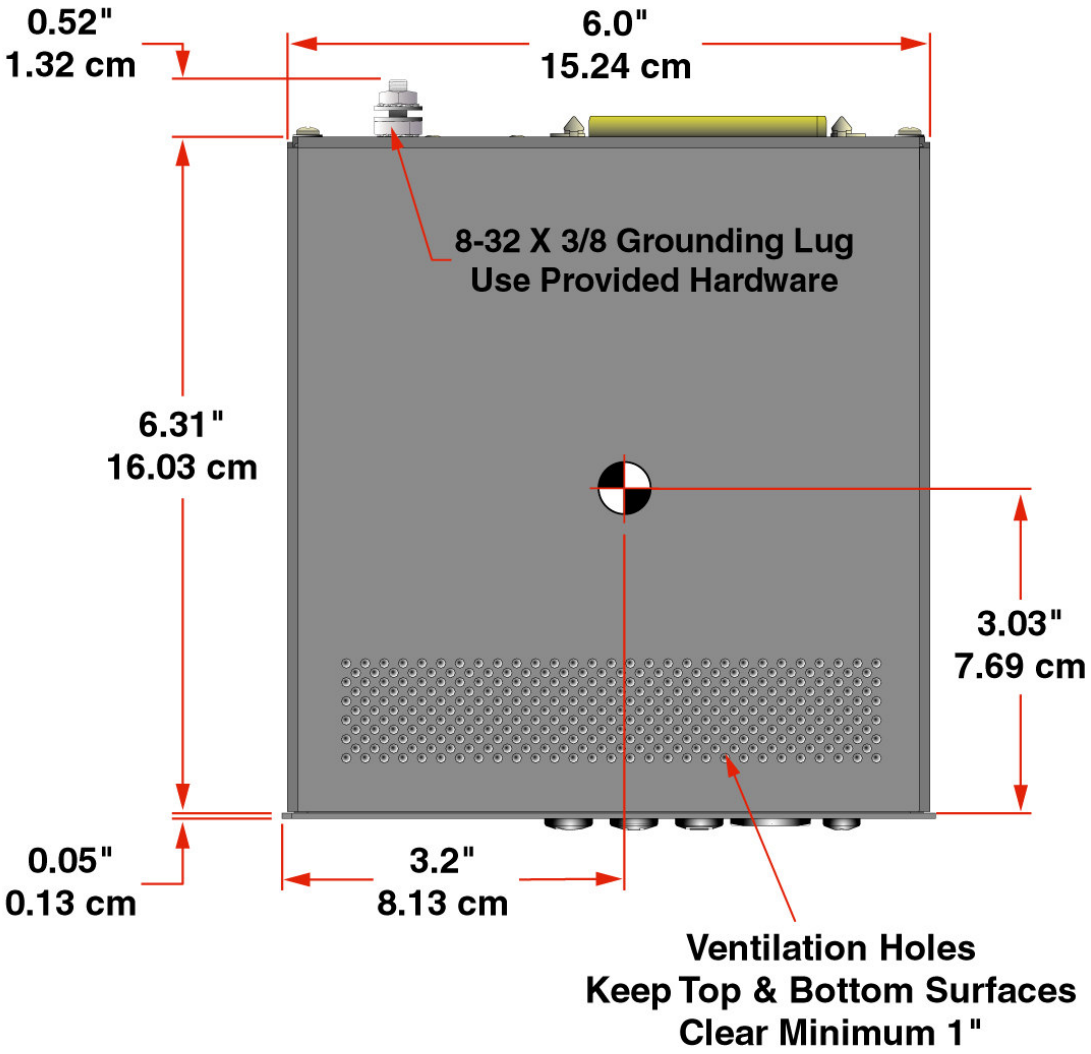
7.0 Specifications

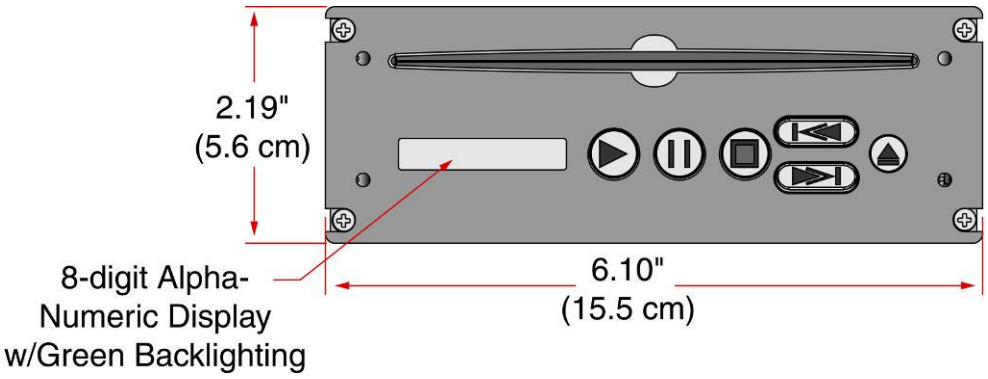
Physical Specifications—Base Unit	
Housing	Anodized Aluminum
Weight	Approx. 2.64 lb / 1.2 kg
Dimensions* (l x w x h)	6.83" x 6.00" x 2.09" 17.35 cm x 15.24 cm x 5.30 cm

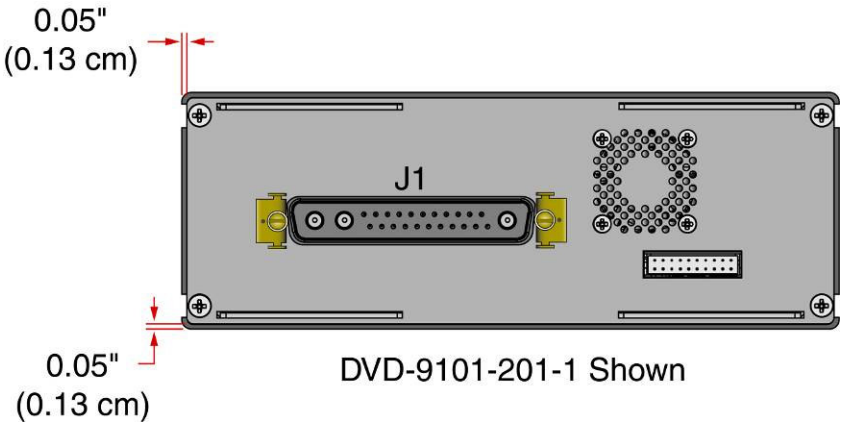
* Dimensions provided are for the base unit, DVD-9101-201-x. They do not include cover bezel information.

8.0 Reference Drawings

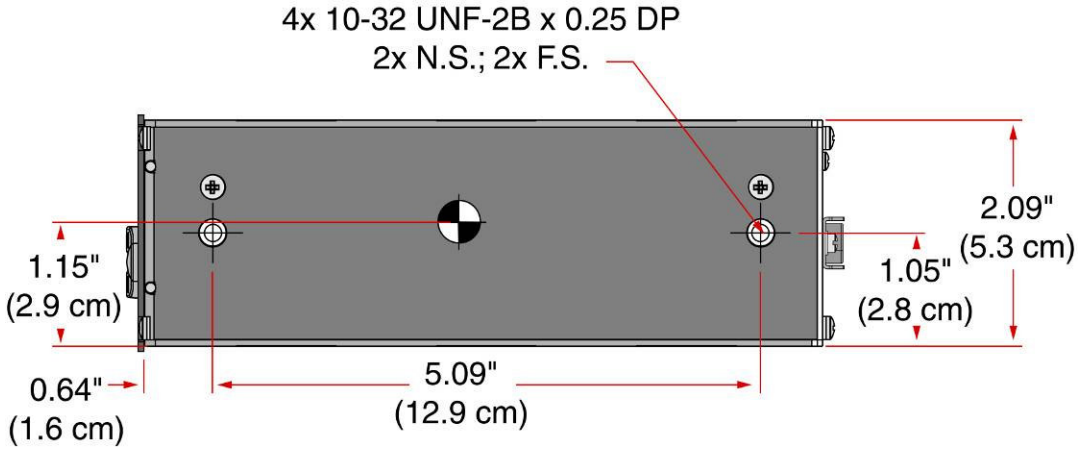
The following diagrams show the unit dimensions, mounting locations, and connector locations for the DVD-9101-201-x. Cover bezel not depicted.







DVD-9101-201-1 Shown



9.0 Environmental Qualification Data

Manufacturer's Specification and/or applicable Specification:

AI Document 620370
D-9460 ETL

Revision & Change Number of DO-160: E Date Tested: 3/16/2007

Conditions	Section	Description of Test Conducted
Temperature and Altitude	4.0	Category A1
Low Temperature	4.5.1	
High Temperature	4.5.2 & 4.5.3	
In-Flight Loss of Cooling	4.5.4	In-Flight Loss of Cooling Not Tested
Altitude	4.6.1	
Decompression	4.6.2	
Overpressure	4.6.3	
Temperature Variation	5.0	Category C
Humidity	6.0	Not Tested
Operational Shock and Crash Safety	7.0	Category B
Vibration	8.0	Category S, Curve B
Explosion	9.0	Not Tested
Waterproofness	10.0	Not Tested
Fluids Susceptibility	11.0	Not Tested
Sand and Dust	12.0	Not Tested
Fungus	13.0	Not Tested
Salt Spray	14.0	Not Tested
Magnetic Effect	15.0	Not Tested
Power Input	16.0	Category A
Voltage Spike	17.0	Category A
Audio Frequency Susceptibility	18.0	Not Tested
Induced Signal Susceptibility	19.0	Not Tested
Radio Frequency Susceptibility	20.0	Not Tested
Radio Frequency Emission	21.0	Category B
Lightning Induced Transient Susceptibility	22.0	Not Tested
Lightning Direct Effects	23.0	Not Tested
Icing	24.0	Not Tested
Electrostatic Discharge	25.0	Not Tested
Fire, Flammability	26.0	Not Tested